MEMORANDUM

20 November 1963

25X1A

TO: [redacted]

25X1A

FROM: [redacted]

SUBJECT: "I" Project Testing Program

A series of tests were performed with Unit 112A in our Environmental Lab in an effort to simulate flight conditions and qualify the unit. The tests included thermal environment, atmospheric pressure, system dynamics, vibration analysis, photo/optic checks, electircal mechanical evaluation and simulation of Flight Motion.

During the thermal testing cycle (30° to 140°F) microscopic observations and measurements were taken of the auto collimated image. No focus change or image quality deterioration was detected.

Atmospheric pressure (1 to 1/100 atmosphere) conditions were introduced to the system. Evaluation was made of the focus and image using the previously described technique. Here again the analysis confirmed to the predicted changes (i.e. a linear response to pressure). Additionally, thermal and pressure were jointly introduced in order to observe any inter reaction.

To evaluate the system dynamics and vibration resolution photography was made to establish the resolution standard. The post resolution photography showed no unaccounted for loss by dynamics vibration.

The electrical and mechanical checkouts were made to previously established levels of acceptance and therefore were considered fully qualified.

The photo/optical testing included resolution at high and low contrast levels going through focus, format fogging for banding analysis, the Dr. A film flatness and static through focus runs on the Mann Bench and Environmental lab Simulator.

All tests indicated that the unit was at optimum performance for shipment. Operational test results also verified peak performance with the following exceptions:

1. During testing a soft area was observed and became more apparent as longer exposure times were used on

later flights. The cause of this fault has been located and corrections have been made by mechanical adjustments and increasing film tension.

2. Elastic vehicle motions caused image smear when longer exposure times were used. A faster emulsion (i.e. SO 206) for shorter exposure time will be required during low light level photography.

3. During a clearing run rapid cycling was caused by a faulty power input to the camera. Physical damage to the roller head assembly produced additional film lift, placing the film outside of focus by approximately .006". This lift gave a soft image area of approximately 3/4" wide along the format edge. The unit has since been desassembled and the damaged parts are being replaced. In addition an electrical governing system has been incorporated to prevent future occurance of this nature.

When the unit is reassembled a requalification test program as previously outlined will be made. Any deviation from the original performance levels will be spelled out and fully analyzed prior to shipment.

25X1A [redacted]

Sr. Photographic Engineer